



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,684	11/03/2000	Hang Zhang	PAT 308-2	4359

26123 7590 02/12/2004

BORDEN LADNER GERVAIS LLP  
WORLD EXCHANGE PLAZA  
100 QUEEN STREET SUITE 1100  
OTTAWA, ON K1P 1J9  
CANADA

EXAMINER

NGUYEN, TOAN D

ART UNIT	PAPER NUMBER
----------	--------------

2665

DATE MAILED: 02/12/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/704,684

Applicant(s)

ZHANG ET AL.

Examiner

Toan D Nguyen

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Oath/Declaration*

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: The serial number and the filing date of the specification are not filled out in the blank on page 1 of Declaration.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1-2, 9 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raychaudhuri et al. (U.S. Patent 5,684,791).

Art Unit: 2665

For claim 1, Raychaudhuri et al. disclose data link control protocols for wireless ATM access channels, comprising:

(ii) receiving a reported channel condition for a forward link from the terminal (figure 10, col. 13 lines 1-36);

(iii) determining a link mode for transmission to the terminal according to the reported channel condition (figure 10, col. 13 lines 1-36); and

(iv) scheduling each of the plurality of packets in order of its respective wireless, quality of service condition, and at the determined link mode, for transmission in a physical layer frame (figures 11-13, col. 13 line 37 to col. 14 line 2).

Raychaudhuri et al. do not explicitly disclose (i) determining a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal. However, Raychaudhuri et al. disclose ATM services with QoS requirements are provided on an end-to-end basis with standard ATM signaling functions being terminated at a mobile unit of a wireless network (col. 4 lines 49-51). Raychaudhuri et al. disclose further in order to overcome the effects of the inherent high error rate associated with the radio channel, a new data link control (DLC) is used in wireless ATM to provide an additional layer of error protection to ATM services. DLC protocols are not only applied to packet-mode ABR services, but also to stream-mode CBR and VBR services, with the transmission schemes matched to the requirements of the individual service classes.

Therefore, it would have been obvious to one of ordinary skill in the art to broadly interpret the determination of different types of services ABR, CBR and VBR having different

Art Unit: 2665

QoS requirements and different priorities as the determination of the wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal.

For claim 2, Raychaudhuri et al. disclose wherein the determination of the wireless quality of service condition includes assigning a packet tag to each of the plurality of packets (figure 11, col. 13 lines 38-41).

For claim 9, Raychaudhuri et al. disclose data link control protocols for wireless ATM access channels, comprising:

a packet tag computation unit for determining a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal (figure 11, col. 13 lines 38-46);

a link mode determination unit for receiving a reported channel condition for a forward link from the terminal (figure 10, col. 13 lines 1-36), and for determining a link mode for transmission to the terminal according to the reported channel condition (figure 11, col. 13 lines 1-36); and

a scheduling unit (figure 2, col. 6 lines 32-47) for scheduling each of the plurality of packets in order of its respective wireless quality of service condition, and at the determined link mode, for transmission in a physical layer frame (figures 11-13, col. 13 line 37 to col. 14 line 2).

Raychaudhuri et al. do not explicitly disclose determining a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal. However, Raychaudhuri et al. disclose ATM services with QoS requirements are provided on an end-to-end basis with standard ATM signaling functions being terminated at a mobile unit of a wireless network (col. 4 lines 49-51). Raychaudhuri et al. disclose further in order to overcome the effects of the inherent high error rate associated with the radio channel, a new data link control (DLC) is

Art Unit: 2665

used in wireless ATM to provide an additional layer of error protection to ATM services. DLC protocols are not only applied to packet-mode ABR services, but also to stream-mode CBR and VBR services, with the transmission schemes matched to the requirements of the individual service classes.

Therefore, it would have been obvious to one of ordinary skill in the art to broadly interpret the determination of different types of services: ABR, CBR and VBR having different QoS requirements and different priorities as the determination of the wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal.

For claim 14, Raychaudhuri et al. disclose data link control protocols for wireless ATM access channels, comprising:

a radio transceiver for sending a physical layer frame to a terminal (figure 5, col. 8 lines 4-25), and a scheduler (figure 2, col. 6 lines 32-47) for scheduling packets for transmission to the terminal, the scheduler having a packet tag computation unit for determining a wireless quality of service condition for each of a plurality of packets awaiting transmission to the terminal (figure 11, col. 13 lines 38-46); a link mode determination unit for receiving a reported channel condition for a forward link from the terminal (figure 10, col. 13 lines 1-36); and for determining a link mode for transmission to the terminal according to the reported channel condition (col. 13 lines 1-36); and a scheduling unit for scheduling each of the plurality of packets in order of its respective wireless quality of service condition, and at the determined link mode, for transmission in the physical layer frame (figures 11-13, col. 13 line 37 to col. 14 line 2).

Raychaudhuri et al. do not explicitly disclose determining a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal. However,

Art Unit: 2665

Raychaudhuri et al. disclose ATM services with QoS requirements are provided on an end-to-end basis with standard ATM signaling functions being terminated at a mobile unit of a wireless network (col. 4 lines 49-51). Raychaudhuri et al. disclose further in order to overcome the effects of the inherent high error rate associated with the radio channel, a new data link control (DLC) is used in wireless ATM to provide an additional layer of error protection to ATM services. DLC protocols are not only applied to packet-mode ABR services, but also to stream-mode CBR and VBR services, with the transmission schemes matched to the requirements of the individual service classes.

Therefore, it would have been obvious to one of ordinary skill in the art to broadly interpret the determination of different types of services ABR, CBR and VBR having different QoS requirements and different priorities as the determination of the wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal.

For claim 15, Raychaudhuri et al. disclose the radio transceiver is included in a base station (col. 8 lines 4-7).

5. Claims 3-5 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raychaudhuri et al. (U.S. Patent 5,684,791) in view of Chiussi et al. (U.S. Patent 6,532,213 B1).

For claim 3-5, Raychaudhuri et al. do not disclose wherein the packet tag includes a start time and a finish time. In an analogous art, Chiussi et al. disclose wherein the packet tag includes a start time and a finish time (col. 2 lines 18-22 and col. 5 lines 26-28). Chiussi et al. disclose further wherein scheduling includes determining a deadline for each of the plurality of packets as a function of their respective start times and a current system time (col. 2 lines 17-22 as set forth

Art Unit: 2665

in claim 4); wherein the scheduling includes scheduling the plurality of packets in order of their respective deadlines (col. 2 lines 17-22 as set forth in claim 5).

One skilled in the art would have recognized the packet tag includes a start time and a finish time to use the teachings of Chiussi et al. in the system of Raychaudhuri et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the packet tag includes a start time and a finish time as taught by Chiussi et al. in Raychaudhuri et al.'s system with the motivation being to provide a scheduler that maintains a queue of packets for each delay class (col. 5 lines 25-26).

For claims 10-11, Raychaudhuri et al. do not disclose wherein the packet tag computation unit determines a start time and a finish time for each of the plurality of packets, the start time and finish time being functions of the respective packet delay bound and an arrive time for each of the plurality of packets. In an analogous art, Chiussi et al. disclose wherein the packet tag computation unit (col. 7 lines 35-40) determines a start time and a finish time for each of the plurality of packets, the start time and finish time being functions of the respective packet delay bound and an arrive time for each of the plurality of packets (col. 2 lines 18-22 and col. 5 lines 26-28). Chiussi et al. disclose further wherein the scheduling unit determines a deadline for each of the plurality of packets as a function of its respective start time and a current system time (col. 2 lines 17-22 as set forth in claim 11).

One skilled in the art would have recognized the packet tag includes a start time and a finish time to use the teachings of Chiussi et al. in the system of Raychaudhuri et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the packet tag includes a start time and a finish time as taught by Chiussi et al. in Raychaudhuri et



Art Unit: 2665

al.'s system with the motivation being to provide a scheduler that maintains a queue of packets for each delay class (col. 5 lines 25-26).

6. Claims 6-8 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raychaudhuri et al. (U.S. Patent 5,684,791) in view of Walton et al. (U.S. Patent 6,493,331 B1).

For claims 6-8, Raychaudhuri et al. do not disclose wherein further packets are scheduled for transmission to other terminals. In an analogous art, Walton et al. disclose wherein further packets are scheduled for transmission to other terminals (figure 1, col. 7 lines 6-11 and col. 28 lines 55-64). Walton et al. disclose further wherein the scheduling includes determining which of the terminal and the other terminals has a best reported channel condition (figure 9, col. 29 lines 9-35 and col. 29 line 67 to col. 30 line 3 as set forth in claim 7); wherein the scheduling includes scheduling packets destined to the determined terminal before scheduling packets to a remaining terminal (figure 9, col. 29 lines 9-35 and col. 30 lines 7-17 as set forth in claim 8).

One skilled in the art would have recognized packets are scheduled for transmission to other terminals to use the teachings of Walton et al. in the system of Raychaudhuri et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the packets are scheduled for transmission to other terminals as taught by Walton et al. in Raychaudhuri et al.'s system with the motivation being to schedule the data transmission to meet the system goals for the cells (col. 28 lines 57-58).

For claims 12-13, Raychaudhuri et al. do not disclose wherein the link mode determination unit receives a plurality of reported channel conditions for a plurality of terminals. In an analogous art, Walton et al. disclose wherein the link mode determination unit receives a plurality of reported channel conditions for a plurality of terminals (figure 9, col. 29 lines 9-35

Art Unit: 2665

and col. 29 line 51 to col. 30 line 3). Walton et al. disclose further wherein the scheduling unit considers the plurality of reported channel conditions (figure 9, col. 29 lines 9-35 and col. 29 line 58 to col. 30 27 as set forth in claim 13).

One skilled in the art would have recognized the link mode determination unit receives a plurality of reported channel conditions for a plurality of terminals to use the teachings of Walton et al. in the system of Raychaudhuri et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the link mode determination unit receives a plurality of reported channel conditions for a plurality of terminals as taught by Walton et al. in Raychaudhuri et al.'s system with the motivation being to schedule the data transmission to meet the system goals for the cells (col. 28 lines 57-58).

#### ***Contact Information***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D Nguyen whose telephone number is 703-305-0140. The examiner can normally be reached on Monday- Friday (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 703-308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Application/Control Number: 09/704,684

Page 10

Art Unit: 2665

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Toan D. Nguyen*

Toan D. Nguyen